

U.S.S.N. 09/415,781
Filed: October 8, 1999
RESPONSE TO OFFICE ACTION

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously amended) A coated fuel cell bipolar plate comprising:
a metal plate;
an electrically conductive coating over the metal plate; and
a corrosion resistant overcoating formed over the electrically conductive coating,
the corrosion resistant overcoating including graphite;
wherein the electrically conductive coating bonds the corrosion resistant
overcoating to the metal plate.
2. (Previously amended) A coated fuel cell bipolar plate as claimed in claim 1, wherein the
metal plate comprises aluminum.
3. (Previously amended) A coated fuel cell bipolar plate as claimed in claim 1, wherein the
electrically conductive coating is a graphite emulsion.
4. (Previously amended) A coated fuel cell bipolar plate as claimed in claim 1, wherein the
electrically conductive coating includes graphite particles in an organic suspension.
5. (Previously amended) A coated fuel cell bipolar plate as claimed in claim 1, where the
corrosion resistant overcoating includes exfoliated graphite.
6. (Previously amended) A coated fuel cell bipolar plate as claimed in claim 1, wherein the
corrosion resistant overcoating includes porosities that are filled by the electrically conductive
coating.

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7. (Previously amended) A coated fuel cell bipolar plate as claimed in claim 1, wherein the corrosion resistant overcoating is a foil.
8. (Previously amended) A coated fuel cell bipolar plate as claimed in claim 1, wherein the corrosion resistant overcoating includes particulate graphite flakes which have been processed through an intercalation process.
9. (Previously amended) A coated fuel cell bipolar plate as claimed in claim 1, wherein the corrosion resistant overcoating is electrically conductive.
10. (Previously amended) A coated fuel cell bipolar plate as claimed in claim 1, wherein the corrosion resistant overcoating is hydrophobic.
11. (Previously amended) A coated fuel cell bipolar plate as claimed in claim 1, wherein the corrosion resistant overcoating is anisotropic.
12. (Previously amended) A coated fuel cell bipolar plate as claimed in claim 1, wherein the corrosion resistant overcoating has a thickness approximately between 0.04 and 1.0 millimeters.
13. (Previously amended) A method of manufacturing a coated bipolar plate for a fuel cell, the method comprising the steps of:
 - providing a metal plate;
 - providing an electrically conductive coating over the metal plate; and
 - providing a corrosion resistant overcoating over the electrically conductive coating, the corrosion resistant overcoating including graphite;wherein the electrically conductive coating bonds the corrosion resistant overcoating to the metal plate.
14. (Previously amended) A method as claimed in claim 13, wherein the electrically conductive coating is an emulsion, suspension or paint including graphite particles.

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15. (Previously amended) A method as claimed in claim 13, wherein the corrosion resistant overcoating includes exfoliated graphite.

16. (Previously amended) A method as claimed in claim 13, wherein the step of providing the corrosion resistant overcoating includes pressing at least one sheet of graphite foil over the electrically conductive coating.

17. (Original) A method as claims in claim 16, wherein the metal plate is heated during the pressing step.

18. (Previously amended) A method as claimed in claim 13, further comprising the step of: forming a flow field on the corrosion resistant overcoating.

19. (Previously amended) A method as claimed in claim 13, further comprising the step of: mechanically deforming the metal plate, the electrically conductive coating and the corrosion resistant overcoating to create a flow field.

20. (Previously amended) A method of manufacturing a coated bipolar plate for a fuel cell, the method comprising the steps of:

providing a metal plate;

providing an electrically conductive coating over the metal plate; and

providing a corrosion resistant overcoating over the electrically conductive coating, the corrosion resistant overcoating being electrically conductive and hydrophobic;

wherein the electrically conductive coating bonds the corrosion resistant overcoating to the metal plate.

21. (Previously added) A coated fuel cell bipolar plate comprising:

a metal plate including an outer surface;

an electrically conductive coating over the outer surface; and

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an overcoating formed over the electrically conductive coating, the overcoating including graphite, the overcoating including porosities that are filled by the electrically conductive coating.

22. (Previously added) A coated fuel cell bipolar plate comprising:

a metal plate including an outer surface;

an electrically conductive coating over the outer surface; and

an overcoating formed over the electrically conductive coating, the overcoating including graphite, the overcoating being a foil.

23. (Previously added) A coated fuel cell bipolar plate comprising:

a metal plate including an outer surface;

an electrically conductive coating over the outer surface; and

an overcoating formed over the electrically conductive coating, the overcoating including graphite, the overcoating having a thickness approximately between 0.04 and 1.0 millimeters.

24. (Previously added) A method of manufacturing a coated bipolar plate for a fuel cell, the method comprising the steps of:

providing a metal plate with an outer surface;

providing an electrically conductive coating over the outer surface; and

providing an overcoating over the electrically conductive coating, the overcoating including graphite;

wherein the step of providing the overcoating includes pressing at least one sheet of graphite foil over the electrically conductive coating.

25. (Previously added) A method as claimed in claim 24, wherein the metal plate is heated during the pressing step.